

Fig. 3 Precision Cyclo Gear System with Three Camshafts, Three Wave Disks, Three Planet Gears, Three Connecting Torque Rods and One Sun Gear, and Hollow Center.

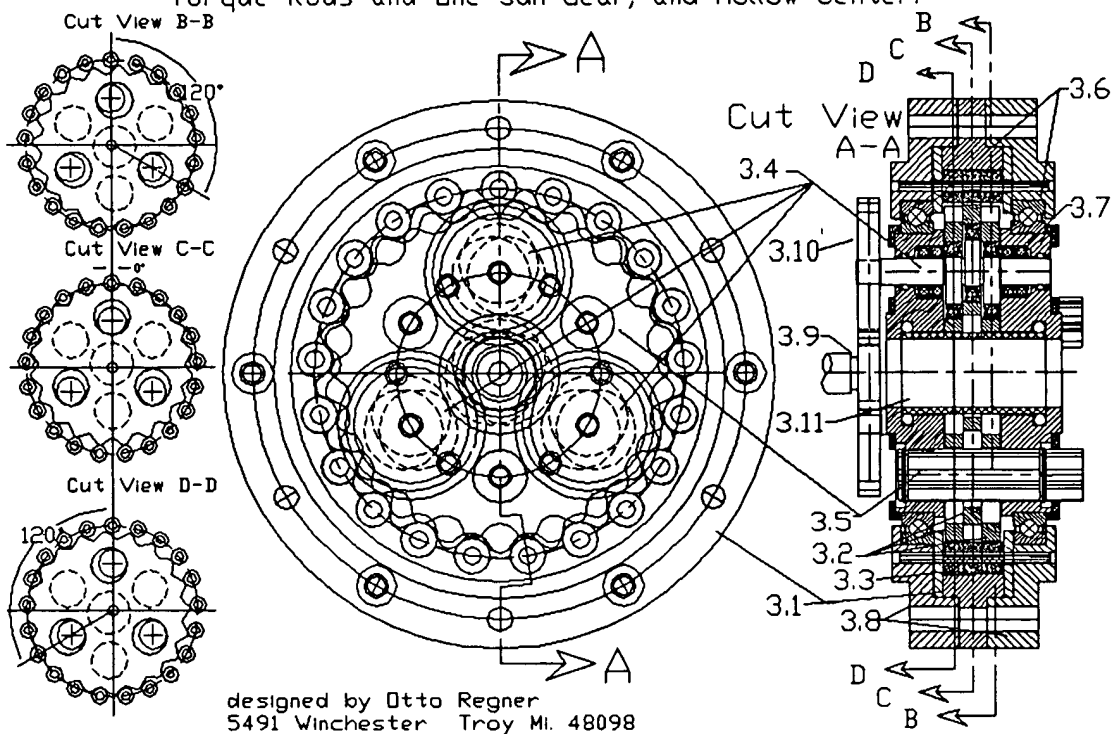


Fig. 4 Heavy-Duty Precision Cyclo Gear System with Three Camshafts, Three Torque Rods, Three Disks, Three Planet Gears, One Center or One Outer-Centered Peripheral Sun Gear, and Hollow Center Hole

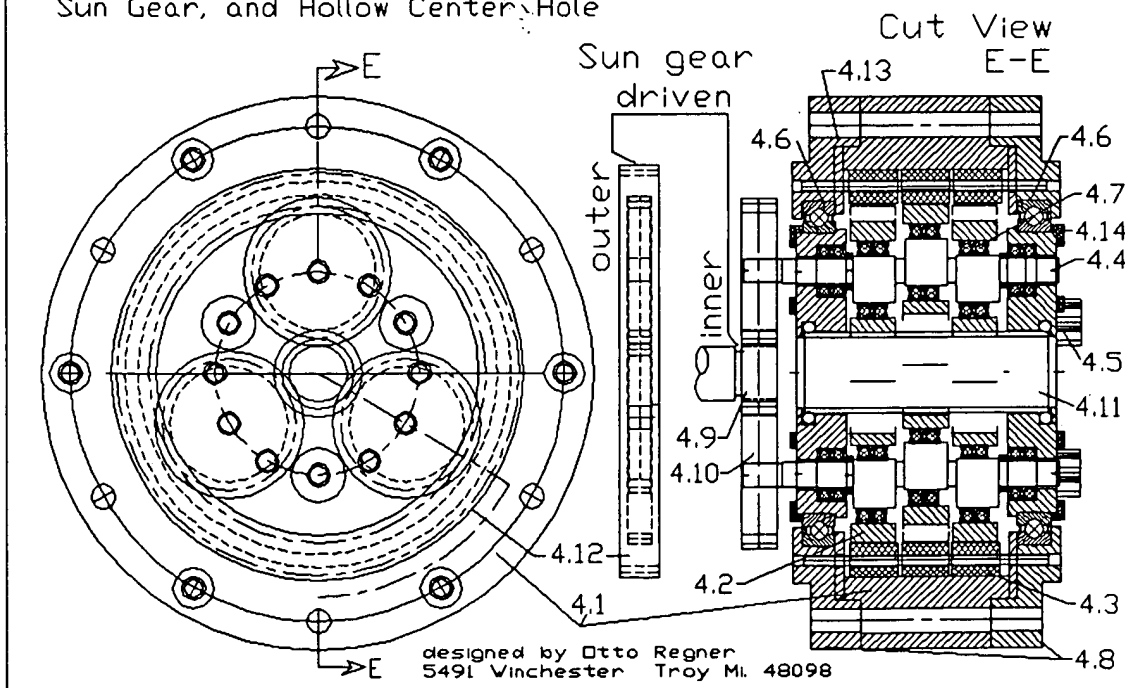


Fig. 5 Center-Driven Cyclo Integrated Gear-Axes with 1 or 2 or 3 Disks, and Six Torque Bars with Low-Friction Bushings, and Pre-Loaded Cross-Roller Bearings.

designed by Otto Regner
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Fig. 6 ONE DISK ABSOLUTE ANGULAR ROTATION ENCODER USING LOW-POWER INFRA RED LED, TTL UP/DOWN COUNTER WITH SHIFT REGISTER AND LOCAL RECHARGEABLE BATTERY POWER BACKUP

6.4 RECHARGEABLE BATTERY

LED

6.2

6.3

6.1

ANGULAR ROTATION ENCODER

ANGULAR ENCODER

6.5

SHIFT SERIAL SHIFT OUT

CLOCK PARALLEL IN

RE-SET

UP/DOWN COUNTER AND SHIFT-REGISTER

TO AXES CONTROL

SERIAL SHIFT OUT (A + B) / 2

UP/DOWN

UP/DOWN CONTROL

EXCLUSIVE (A + B) / 2

CHANNEL A

CHANNEL B

7.1 R1

7.2 R2

7.3

7.4

7.5

7.6

7.7

7.8

TO SERVO AMP. INPUT

TO SERVO AMP. OUTPUT

7.4

7.5

7.6

7.7

7.8

UNDERDAMPED

CRITICALLY-DAMPED

HIGHLY-DAMPED

FREQUENCY

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